REMARKS

The application has been carefully reviewed in light of the Office Action dated January 16, 2004. Claims 1, 24 and 25 have been amended. Claims 1-25 are pending in this case.

Claims 1-25 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Watanabe et al. (U.S. Patent No. 6,107,637) in view of Okubo et al. (U.S. Patent No. 5,872,862). Applicants traverse the rejection and respectfully request reconsideration.

Claims 1, 24 and 25 are directed to semiconductor inspection systems each having a template comprising a bitmap based on semiconductor chip design information and a grayscale image or portion of a grayscale image provided by a scanning electron microscope that corresponds to the template and is re-registered as the template.

Watanabe discloses an electron beam exposure or system inspection or measurement apparatus and a method thereof in which the image distortion caused by the deflection and the aberration of the electron optical system can be reduce. The decrease of the resolution due to the de-focusing can be reduced so that the quality of the electron beam image (SEM image) can be improved.

Okubo discloses an electron beam tester scans a sample with an electron beam to provide a secondary electron image, matches wiring patterns of the secondary electron image with wiring patterns prepared from CAD data, measures voltages of the wiring patterns, and corrects deformation of the secondary electron image.

Both Watanabe and Okubo fail to teach or suggest the unique feature of the present invention that, by performing a pattern matching process between a line image,

such as a bitmap, and a grayscale image, such as an SEM image, an image suitable for pattern matching is obtained from the grayscale image and re-registered as the template. Watanabe discloses SEM images used to extract a defect by comparing SEM images of adjacent semiconductor chips. Okubo merely matches wiring patterns of a secondary electron image with wiring patterns of a secondary electron image with wiring patterns prepared from CAD data.

In accordance with the present invention, based on a matching process between a bitmap and a grayscale image, the grayscale image replaces the SEM image without the need of an operator to register a template image. Utilizing grayscale images in the pattern matching process increases the accuracy in pattern matching and is a unique feature of the present invention. As such, bitmap data is replaced with grayscale data to a achieve precision in pattern matching which does not require human intervention.

Thus, the proposed combination does not teach or suggest the invention as claimed. The combination of Watanabe and Okubo does not teach or suggest all of the limitations of claims 1, 24 and 25. Therefore, the rejection of claims 1, 24 and 25 under 35 U.S.C. § 103(a) should be withdrawn. Claims 2-23 depend from claim 1 and are allowable over the combination of Watanabe and Okubo for the reasons mentioned above with respect to claim 1, and also because Watanabe and Okubo fail to teach or suggest the respective inventive combinations defined by claims 2-23.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

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Respectfully submitted,

By _____

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